

Attorney docket AI 332

IN THE CLAIMS

1.-5. (canceled)

6. (currently amended): A semiconductor device comprising:

a plurality of cells each including a drain region of a first conductivity type, a channel region of a second conductivity type different from the first conductivity type and a source region of the first conductivity type stacked in this order on a semiconductor substrate so as to be capable of forming a channel in a direction of a thickness of the semiconductor substrate; and

a low resistance region of the second conductivity type having a conductivity higher than that of the channel region, the low resistance region forming a part of an inner wall of a hole formed between adjacent ones of the plurality of cells, the low resistance region extending in an isotropic manner with respect to a predetermined region in the hole so as to be in contact with the channel region,

wherein the drain region is shared by the plurality of the cells; and

wherein the low resistance region and the drain region are in contact with each other.

7. (currently amended): A semiconductor device comprising:

a plurality of cells each including a drain region of a first conductivity type, a channel region of a second conductivity type different from the first conductivity type and a source region of the first conductivity type stacked in this order on a semiconductor substrate so as to be capable of forming a channel in a direction of a thickness of the semiconductor substrate; and

a low resistance region of the second conductivity type having a conductivity higher than that of the channel region, the low resistance region forming a part of an inner wall of a hole formed between adjacent ones of the plurality of cells and being in contact with the channel region,

wherein the drain region is shared by the plurality of the cells, and

wherein the size width of the cell being is smaller than 2 μ m.

AMENDMENT

3

10/809,682

Attorney docket AI 332

8. (original): A semiconductor device according to claim 6, wherein the low resistance region and the source region are in contact with each other.
9. (canceled)
10. (currently amended): A semiconductor device according to claim 6, further comprising a ~~source deriving~~ source driving electrode being in contact with the source region and shared by the plurality of cells, wherein the low resistance region and the source ~~deriving~~ driving electrode are in contact with each other.
11. (currently amended): A semiconductor device according to claim 7, further comprising a ~~source deriving~~ source driving electrode being in contact with the source region and shared by the plurality of cells, wherein the low resistance region and the source region are in contact with each other.
12. (currently amended): A semiconductor device according to claim 7, further comprising a ~~source deriving~~ source driving electrode being in contact with the source region and shared by the plurality of cells, wherein the low resistance region and the drain region are in contact with each other.
13. (currently amended): A semiconductor device according to claim 7 further comprising a ~~source deriving~~ source driving electrode being in contact with the source region and shared by the plurality of cells, wherein the low resistance region and the source ~~deriving~~ driving electrode are in contact with each other.
14. (new): A semiconductor device according to claim 7, wherein the width is the interval between two adjacent holes.
15. (new): A semiconductor device according to claim 6, wherein the hole extends downward into the drain region.

AMENDMENT

4

10/809,682